

CE CIT UOB
ITCE471 (DSP)
Test 2

Time: 1 hour

Date: 12 May 2014

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Q1 [25 marks= 5+20]

- a) A digitized ECG signal is sampled at 1 kHz sampling frequency. How many FFT data points are needed for 0.2 Hz resolution in its spectrum?

- b) If the sampling frequency of the signal $x[n] = (0.5)^n u[n]$ is 10 kHz. Find the magnitude and phase of the 4 kHz component of the spectrum when the number of data points = 5

Q2 [30 marks]

Find the Z-transform of the system $\mathbf{h[n] = (0.5)^{-n} u[-n] + (0.5)^n u[n]}$. Discuss its ROC and stability.

Q3 [45 marks]

Find the **transfer function**, **difference equation** and **impulse response** of the following system:

